

WHAT WE CLAIM IS:

1. A charging system for a rapid charge battery, comprising:
  - a charging equipment for said rapid charge battery;
  - a measurement display unit which measures deterioration and charging level of said rapid charge battery; and
  - a fee collection device which collects a battery charging fee.
2. A charging system for a rapid charge battery, comprising:
  - a charging processor which has a charging equipment for said rapid charge battery and a measurement display unit which measures deterioration and charging level of said rapid charge battery; and
  - a charging information center which has a data base to store user information therein and a charging unit, wherein when the user utilizes said charging processor, said charging processor and said charging information center communicate with each other via a communication network.
3. The charging system for the rapid charge battery of Claim 2, wherein
  - said charging information center has a control unit monitoring and controlling the deterioration of the rapid charge battery; and
  - said control unit notifies the user via said charging processor when the deterioration of the rapid charge battery goes below a predetermined level.
4. The charging system for the rapid charge battery of Claim 1, wherein
  - the rapid charge battery is a nonaqueous electrolyte secondary battery, which comprises positive and negative electrodes having materials that occlude and release a lithium ion and containing nonaqueous electrolyte having lithium salt and organic solvent.
5. The charging system for the rapid charge battery of Claim 2, wherein
  - the rapid charge battery is a nonaqueous electrolyte secondary battery, which comprises positive and negative electrodes having materials that occlude and release a lithium ion and containing nonaqueous electrolyte having lithium salt and organic solvent.
6. The charging system for the rapid charge battery of Claim 4, wherein
  - if a charging current flows in the rapid charge battery after completing

the charging reaction, the rapid charge battery causes migration of electrons only and functions to prevent said electrode active material from transformation.

7. The charging system for the rapid charge battery of Claim 5, wherein

if a charging current flows in the rapid charge battery after completing the charging reaction, the rapid charge battery causes migration of electrons only and functions to prevent electrode active material from transformation.

8. The charging system for the rapid charge battery of Claim 6, wherein

the rapid charge battery is said nonaqueous electrolyte secondary battery which involves the electrolyte with a material subject to oxidation at the positive electrode and causes an oxidation reaction different from the lithium release reaction at the positive electrode while causing a reduction reaction different from said lithium occlusion reaction at the negative electrode.

9. The charging system for the rapid charge battery of Claim 7, wherein

the rapid charge battery is said nonaqueous electrolyte secondary battery which involves the electrolyte with a material subject to oxidation at the positive electrode and causes an oxidation reaction different from said lithium release reaction at the positive electrode while causing a reduction reaction different from said lithium occlusion reaction at the negative electrode.

10. The charging system for the rapid charge battery of Claim4, wherein

the charging equipment of the rapid charge battery is designed such that when charging the electric current values ( $X$  ampere,  $X \geq 0A$ ) and the charging time ( $t$  seconds,  $t \neq 0$  second) with the predetermined  $P$  in combination with any of  $P_1(X_1, t_1) \rightarrow P_2(X_2, t_2) \rightarrow P_3(X_3, t_3) \dots \rightarrow P_n(X_n, t_n) \rightarrow P_{n+1}(X_{n+1}, t_{n+1})$  (here,  $n =$  integer of 1 or more), the electric current values ( $X$  ampere) of the continuous charging pattern ( $P$ ) are different from each other.

11. The charging system for the rapid charge battery of Claim5, wherein

the charging equipment of the rapid charge battery is designed such that when charging the electric current values ( $X$  ampere,  $X \geq 0A$ ) and the charging time ( $t$  seconds,  $t \neq 0$  second) with the predetermined  $P$  in combination with any of  $P_1(X_1, t_1) \rightarrow P_2(X_2, t_2) \rightarrow P_3(X_3, t_3) \dots \rightarrow P_n(X_n, t_n) \rightarrow P_{n+1}(X_{n+1}, t_{n+1})$  (here,  $n =$  integer of 1 or more), the electric current values ( $X$  ampere) of the continuous charging pattern ( $P$ ) are different from each other.

12. The charging system for the rapid charge battery of Claim 4, wherein  
the charging equipment uses the pattern in combination of the direct  
current charging and the constant voltage charging.
13. The charging system for the rapid charge battery of Claim 5, wherein  
the charging equipment uses the pattern in combination of the direct  
current charging and the constant voltage charging.
14. The charging system for the rapid charge battery of Claim 12, wherein  
the charging equipment uses the pattern in combination of the direct  
current charging and the constant voltage charging.
15. The charging system for the rapid charge battery of Claim 13, wherein  
the charging equipment uses the pattern in combination of the direct  
current charging and the constant voltage charging.